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10/713,479	11/14/2003	Timothy Z. Liu	ABIOS.035A	1204

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EXAMINER	
CROW, ROBERT THOMAS	
ART UNIT	PAPER NUMBER
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NOTIFICATION DATE	DELIVERY MODE
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No.	Applicant(s)	
	10/713,479	LIU ET AL.	
	Examiner	Art Unit	
	Robert T. Crow	1634	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 April 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3,6-12,14-30,32-35 and 46* is/are pending in the application.

4a) Of the above claim(s) *19-30 and 32-35* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,6-12, 14-18, and 46* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of the Claims

1. This action is in response to papers filed 17 April 2008 in which claim 46 was were amended, claims 4-5 were canceled, and no new claims were added. All of the amendments have been thoroughly reviewed and entered.

The objections to the claims listed in the previous Office Action are withdrawn in view of the amendments.

The previous rejections under 35 U.S.C. 112, second paragraph, not reiterated below are withdrawn in view of the amendments. Applicant's arguments have been thoroughly reviewed and are addressed following the rejections.

The previous rejections under 35 U.S.C. 102(b) and 35 U.S.C. 103(a) not reiterated below are withdrawn in view of the amendments. Applicant's arguments have been thoroughly reviewed and are addressed following the rejections necessitated by the amendments.

Claims 1-3, 6-12, 14-18, and 46 are under prosecution.

2. This action is non-final in view of the new rejections presented below.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claim 7 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 7 is vague and indefinite in the recitation "greater than about" in line 2 of claim 7. The phrase "greater than" typically indicates a minimum point; however, the phrase "greater than" is controverted by the term "about," which implies that values above and below the indicated amount are permitted. Therefore, the juxtaposition of these two terms makes it unclear what minimum number of probe elements is encompassed by the claim.

Response to Arguments

5. Applicant's arguments filed 17 April 2008 (i.e., the "Remarks") have been fully considered but they are not persuasive for the reason(s) listed below.

Applicant argues on age 7 of the Remarks that the phrase "greater than about" is not indefinite because MPEP 2173.05(b)(A) stated that "exceeding about 10% per second" is definite.

However, as explicitly stated in 2173.05(b)(A), the phrase "exceeding about 10% per second" was found definite because infringement could clearly be assessed through the use of a stopwatch. The use of a stopwatch clearly cannot be applied to the claimed "grater than about 10 nucleic acid probe elements" because the claimed element has nothing to do with time.

In addition, as clearly stated in 2173.05(b)(A),

> "…the court held that claims reciting "at least about" were invalid for indefiniteness where there was close prior art and there was nothing in the specification, prosecution history, or the prior art to provide any indication as to what range of specific activity is covered by the term "about." Amgen, Inc. v. Chugai Pharmaceutical Co., 927 F.2d 1200, 18 USPQ2d 1016 (Fed. Cir. 1991).

Applicant has not provided any citations in the specification, prosecution history, or the prior art to any indication as to what range of specific activity is covered by the term "about."

Further, as noted in the previous Office Action, the phrase "greater than" typically indicates a minimum point; however, the phrase "at least" is controverted by the term "about," which implies that values above and below the indicated amount are permitted. Therefore, the **juxtaposition** of these two terms makes it unclear what minimum dimensions are encompassed by the claim.

The rejections are therefore **maintained**.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

8. Claims 1-3, 6-11, 14-17, and 46 are rejected under 35 U.S.C. 103(a) as being unpatentable over Blackburn et al (U.S. Patent No. 6,264,825 B1, issued 24 July 2001).

Regarding claims 1 and 11, Blackburn et al teach an apparatus for detecting a target nucleic acid. In a single exemplary embodiment, Blackburn et al teach a support in the form of a substrate comprising an electrode (column 14, lines 40-55). The electrode has a detection probe for a target nucleic acid attached thereto (Figure 4a and column 4, lines 5-38). The probe is a nucleic acid having a sequence complementary to the target nucleic acid (column 4, lines 5-38). The apparatus further comprises a photoelectrochemical label in the form of the ruthenium bipyridyl complex with Ru2+ (bpy3) (column 81, lines 35-47) as a hybridization indicator (column 58, lines 35-57); the label is thus selective for doubled stranded (i.e., hybridized) nucleic acids because it detects hybridization. Blackburn et al also teach a sacrificial reductant contacting the nucleic acid probe; namely, ethylenediaminetetraacetic acid (EDTA) is added to the mixture in the apparatus (column 18, lines 19-25), and thus contacts the nucleic acid probe. The apparatus also comprises a data collection controller for measuring a current at the electrode (column 80, lines 40-55 and column 82, lines 6-25).

Blackburn et al also teach the electron donor and acceptors are photoactivated and photoinitiated (column 80, line 67-column 81 line 5), which requires initiation of a photoelectrochemical reaction. Blackburn et al further teach the preferred method of detection of electron transfer utilizes laser induced fluorescence detected with a standard fluorimeter (column 81, lines 5-22). Laser induced fluorescence requires a laser (i.e., claim 11), which is an electric light source, to initiate the photoelectrochemical reaction, which is then detected by the fluorimeter.

Thus, while Blackburn et al do not explicitly teach the apparatus further comprises the laser based fluorimeter, it would have been obvious to a person of ordinary skill in the art at the time the claimed invention was made to have modified the apparatus as taught by Blackburn to further comprise a laser based fluorimeter as suggested by Blackburn et al to arrive at the instantly claimed apparatus with a reasonable expectation of success. The modification would result in an electric light source in the form of a laser (i.e., claim 11), which is of sufficient intensity and energy to initiate of photochemical reaction of the label (i.e., claim 1). The ordinary artisan would have been motivated to make the modification because said modification would have resulted in an apparatus having the added advantage of allowing the preferred embodiment of Blackburn et al wherein electron detection is performed using laser induced fluorescence as explicitly taught by Blackburn et al (column 81, lines 5-22). In addition, it would have been obvious to the ordinary artisan that the known technique of having a laser based fluorimeter as taught by Blackburn et al could have been incorporated as part of the apparatus of Blackburn et al with predictable results because

the known technique of having a laser based fluorimeter as taught by Blackburn et al predictably results in achieving of the preferred method of detection of Blackburn et al.

Regarding claim 2, the apparatus of claim 1 is discussed above. Blackburn et al teach the nucleic acid probe comprises DNA; namely, the capture probe is a nucleic acid (column 40, lines 34-40), and the nucleic acid is DNA (column 9, lines 10-30).

Regarding claim 3, the apparatus of claim 1 is discussed above. Blackburn et al also teach the nucleic acid probe comprises RNA; namely, the capture probe is a nucleic acid (column 40, lines 34-40), and the nucleic acid is RNA (column 9, lines 10-30).

Regarding claims 6-7, the apparatus of claim 1 is discussed above. Blackburn et al further teach the support comprises an array of nucleic acid probe elements; namely, the array comprises about 10 to about 100 electrodes having probes thereon (column 24, lines 15-30), which are interpreted as the probe elements.

Regarding claim 8, the apparatus of claim 1 is discussed above. Blackburn et al teach the electrode comprises gold (column 15, lines 40-60).

Regarding claims 9-10, the apparatus of claim 1 is discussed above. Blackburn et al teach the photoelectrochemical label in the form of the ruthenium bipyridyl complex Ru2+ (bpy)3 (column 81, lines 35-47).

The preceding rejection is based on judicial precedent following *In re Fitzgerald*, 205 USPQ 594, because Blackburn et al do not specifically teach that Ru2+ (bpy)3 is [Ru(bipy)3]2+. However, the [Ru(bipy)3]2+ is deemed to be Ru2+ (bpy)3 because both “bpy” and “bipy” are known abbreviations for 2,2’-bipyridine, which is a neutral ligand,

which requires the +2 charge of the complex to result from Ru2+. The burden is on Applicant to show that the claimed [Ru(bipy)3]2+ (i.e., claims 9-10) is either different or non-obvious over Ru2+ (bpy)3 of Blackburn et al.

Alternatively, the courts have stated:

> similar properties may normally be presumed when compounds are very close in structure. Dillon, 919 F.2d at 693, 696, 16 USPQ2d at 1901, 1904. See also In re Grabiak, 769 F.2d 729, 731, 226 USPQ 870, 871 (Fed. Cir. 1985) ("When chemical compounds have very close' structural similarities and similar utilities, without more a prima facie case may be made."). Thus, evidence of similar properties or evidence of any useful properties disclosed in the prior art that would be expected to be shared by the claimed invention weighs in favor of a conclusion that the claimed invention would have been obvious. Dillon, 919 F.2d at 697-98, 16 USPQ2d at 1905; In re Wilder, 563 F.2d 457, 461, 195 USPQ 426, 430 (CCPA 1977); In re Linter, 458 F.2d 1013, 1016, 173 USPQ 560, 562 (CCPA 1972) (see MPEP 2144.08(d)).

Therefore, in the event that Ru2+ (bpy)3 is not the same molecule as [Ru(bipy)3]2+, the substitution of Ru2+ (bpy)3 as taught by Blackburn et al for the claimed [Ru(bipy)3]2+ would be considered an obvious variation over the prior art because both compounds are charged Ru complexes with bipyridyl based ligands.

Regarding claim 14, the apparatus of claim 1 is discussed above. Blackburn et al also teach the sacrificial reductant contacting the nucleic acid probe is ethylenediaminetetraacetic acid (EDTA), which is added to the mixture in the apparatus (column 18, lines 19-25).

Regarding claim 15, the apparatus of claim 1 is discussed above.

As noted above, modification of the apparatus of Blackburn et al as suggested by Blackburn et al results in a laser as the light source for the fluorimeter. In addition,

Blackburn et al also teach the device comprises and optical fluorescence scanner (column 80, lines 40-55 and column 81, lines 15-21). A review of the specification yields no limiting definition of what is encompassed by the term “scanner.” Thus, the fluorimeter of Blackburn et al is interpreted as the optical fluorescence scanner because Blackburn et al teach the optical detector (i.e., scanner) detects fluorescence (column 80, lines 40-55), and a fluorimeter detects fluorescence. The claim has therefore been given the broadest reasonable interpretation consistent with the teachings of the specification regarding a “scanner.”

Regarding claim 16, the apparatus of claim 1 is discussed above. Blackburn et al teach further teach a fluid handling system for the support; namely, the apparatus comprises electrodes and particles to control laminar and turbulent flow (column 21, line 60-column 22, line 19), which modulates the flow of fluid in the apparatus.

It is noted that a review of the specification yields no limiting definition of a "fluid handling system;" thus, the claim has been given the broadest reasonable interpretation consistent with the teachings of the specification regarding a “fluid handling system” (*In re Hyatt*, 211 F.3d1367, 1372, 54 USPQ2d 1664, 1667 (Fed. Cir. 2000) (see MPEP 2111 [R-1]).

Regarding claim 17, the apparatus of claim 1 is discussed above. Blackburn et al teach also teach the apparatus further comprises a temperature control system for the support (column 15, lines 30-40).

Regarding claim 46, Blackburn et al teach an apparatus for detecting a target nucleic acid. In a single exemplary embodiment, Blackburn et al teach a support in the

form of a substrate comprising an electrode (column 14, lines 40-55). The electrode has a detection probe for a target nucleic acid attached thereto (Figure 4a and column 4, lines 5-38). The probe is a nucleic acid having a sequence complementary to the target nucleic acid (column 4, lines 5-38). The apparatus further comprises a photoelectrochemical label in the form of a ruthenium complex with bipyridyl ligands (column 81, lines 35-47) as a hybridization indicator (column 58, lines 35-57); the label is thus selective for doubled stranded (i.e., hybridized) nucleic acids because it detects hybridization. Blackburn et al also teach a sacrificial reductant contacting the nucleic acid probe; namely, ethylenediaminetetraacetic acid (EDTA) is added to the mixture in the apparatus (column 18, lines 19-25), and thus contacts the nucleic acid probe. The apparatus also comprises a data collection controller coupled to the electrode operable to measure a current at the electrode (column 80, lines 40-55 and column 82, lines 6-40).

Blackburn et al also teach the electron donor and acceptors are photoactivated and photoinitiated (column 80, line 67-column 81 line 5), which requires initiation of a photoelectrochemical reaction. Because a light source initiates the photoelectro-chemical reaction of the photoelectrochemical label (column 80, line 66-column 81, line 6), the light is therefore incident to at least a portion of the electrode. Blackburn et al also further teach the preferred method of detection of electron transfer utilizes laser induced fluorescence detected with a standard fluorimeter (column 81, lines 5-22). Laser induced fluorescence requires a laser (i.e., claim 11), which is an electric light

source, to initiate the photoelectrochemical reaction, which is then detected by the fluorimeter.

Thus, while Blackburn et al do not explicitly teach the apparatus further comprises the laser based fluorimeter, it would have been obvious to a person of ordinary skill in the art at the time the claimed invention was made to have modified the apparatus as taught by Blackburn to further comprise a laser based fluorimeter as suggested by Blackburn et al to arrive at the instantly claimed apparatus with a reasonable expectation of success. The modification would result in an electric light source in the form of a laser, which is of sufficient intensity and energy to initiate of photochemical reaction of the label. The ordinary artisan would have been motivated to make the modification because said modification would have resulted in an apparatus having the added advantage of allowing the preferred embodiment of Blackburn et al wherein electron detection is performed using laser induced fluorescence as explicitly taught by Blackburn et al (column 81, lines 5-22). In addition, it would have been obvious to the ordinary artisan that the known technique of having a laser based fluorimeter as taught by Blackburn et al could have been incorporated as part of the apparatus of Blackburn et al with predictable results because the known technique of having a laser based fluorimeter as taught by Blackburn et al predictably results in achieving of the preferred method of detection of Blackburn et al.

9. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blackburn et al (U.S. Patent No. 6,264,825 B1, issued 24 July 2001) as applied to claim 1 above, and further in view of Dabiri et al (U.S. Patent No. 5,871,628, issued 16 February 1999).

Regarding claim 12, the apparatus of claim 1 is discussed above in Section 8.

While modification of the apparatus of Blackburn et al as suggested by Blackburn et al results in a laser as the light source (i.e., claim 11), Blackburn et al do not teach the laser radiates visible light (i.e., claim 12).

However, Dabiri et al teach a system for detecting nucleic acids in an array; namely, a system for DNA sequencing using a capillary array (Abstract) comprising electrodes (column 3, lines 65-67) and a laser light source. The laser emits in the visible range (i.e., claim 12); namely, about 488 and 514 nm, which has the added advantage that the laser provides frequencies compatible with a wide variety of fluorescent dyes (column 7, lines 30-36). Thus, Dabiri et al teach the known technique of using a laser that radiates visible light.

It would therefore have been obvious to a person or ordinary skill in the art at the time the claimed invention was made to have modified the apparatus comprising a laser light source of Blackburn et al so that the laser is a visible light laser as taught by Dabiri et al to arrive at the instantly claimed apparatus with a reasonable expectation of success. The ordinary artisan would have been motivated to make the modification because said modification would have resulted in as apparatus having the added advantage of having a light source providing frequencies compatible with a wide variety

of fluorescent dyes as explicitly taught by Dabiri et al (column 7, lines 30-36). In addition, it would have been obvious to the ordinary artisan that the known technique of using a visible light laser of Dabiri et al could have been used as the laser in the apparatus of Blackburn et al with predictable results because the known technique of using a visible light laser of Dabiri et al predictably results in a light source suitable for use in array-based nucleic acid assays.

10. Claim 18 is rejected under 35 U.S.C. 103(a) as being unpatentable over Blackburn et al (U.S. Patent No. 6,264,825 B1, issued 24 July 2001) as applied to claim 1 above, and further in view of Noblett (U.S. Patent No. 6,362,004 B1, issued 26 March 2002).

Regarding claim 18, the apparatus of claim 1 is discussed above in Section 8.

Blackburn et al do not teach machine-readable identifying indicia.

However, Noblett et al teach the use of microarrays comprising immobilized nucleic acids (column 1, lines 20-30) having machine readable identifying indicia (e.g., fiducials [Abstract], wherein the fiducials are scanned by a positioning system; column 6, lines 41-48) with the added advantage of allowing positioning and alignment of the substrate for spot analysis and comparison procedures (Abstract). Thus, Noblett et al teach the known technique of using machine-readable identifying indicia.

It would therefore have been obvious to a person or ordinary skill in the art at the time the claimed invention was made to have modified the apparatus of Blackburn et al to further comprise the machine readable identifying indicia as taught by Noblett et al to

arrive at the instantly claimed apparatus with a reasonable expectation of success. The ordinary artisan would have been motivated to make such a modification because said modification would have resulted in an apparatus allowing positioning and alignment of the substrate for spot analysis and comparison procedures as explicitly taught by Noblett et al (Abstract). In addition, it would have been obvious to the ordinary artisan that the known technique of using the machine readable identifying indicia as taught by Noblett et al could have been applied to the apparatus of Blackburn et al with predictable results because the machine readable identifying indicia as taught by Noblett et al predictably result in a tool used for alignment of scanning equipment during scanning of array-based assays.

Response to Arguments

11. While Applicant's arguments filed in the Remarks refer to the previous rejections of the claims, the Remarks have been fully considered and are discussed below as they apply to the rejections presented in this Office Action.

A. Applicant argues on pages 7-8 that Blackburn et al do note teach a light source that can initiate a photoelectrochemical reaction in the label.

However, as noted above, Blackburn et al do in fact teach the electron donor and acceptors are photoactivated and photoinitiated (column 80, line 67-column 81 line 5), which requires initiation of a photoelectrochemical reaction. Blackburn et al further teach the preferred method of detection of electron transfer utilizes laser induced fluorescence detected with a standard fluorimeter (column 81, lines 5-22). Laser

induced fluorescence requires a laser, which is an electric light source, to initiate the photoelectrochemical reaction, which is then detected by the fluorimeter.

Thus, while Blackburn et al do not explicitly teach the apparatus further comprises the laser based fluorimeter, it would have been obvious to a person of ordinary skill in the art at the time the claimed invention was made to have modified the apparatus as taught by Blackburn to further comprise a laser based fluorimeter as suggested by Blackburn et al to arrive at the instantly claimed apparatus with a reasonable expectation of success. The modification would result in an electric light source in the form of a laser, which is of sufficient intensity and energy to initiate of photochemical reaction of the label. The ordinary artisan would have been motivated to make the modification because said modification would have resulted in an apparatus having the added advantage of allowing the preferred embodiment of Blackburn et al wherein electron detection is performed using laser induced fluorescence as explicitly taught by Blackburn et al (column 81, lines 5-22). In addition, it would have been obvious to the ordinary artisan that the known technique of having a laser based fluorimeter as taught by Blackburn et al could have been incorporated as part of the apparatus of Blackburn et al with predictable results because the known technique of having a laser based fluorimeter as taught by Blackburn et al predictably results in achieving of the preferred method of detection of Blackburn et al.

B. Applicant further argues on page 8 of the Remarks that one skilled in the art would understand that the paragraph cited in the previous Office Action does not disclose a photoelectrochemical reaction.

However as noted above, Blackburn et al do teach that electron donor and acceptors are photoactivated and photoinitiated (column 80, line 67-column 81 line 5), which requires initiation of a photoelectrochemical reaction.

Further, Applicant admits on page 8 of the Remarks that the reaction "would photooxidize or photoreduce the electron donors and acceptors. Oxidation and reduction are electrochemical reactions, as admitted by Applicant in the penultimate paragraph on page 8 of the Remarks, which also states that the electrochemical changes are detected spectroscopically, and that electrons are transferred for the ETM [i.e., the label] to the electrode. Because spectroscopic techniques require the detection of emitted photons, Applicant is therefore admitting that the reactions of Blackburn et al are photoinitiated electrochemical reactions, that transfer electrons to the electrode, and that can also be detected spectroscopically. Thus, Applicant has clear described a photoelectrochemical reaction that is detected by the apparatus.

Further, as noted above, Blackburn et al clearly teach the oxidation and reduction reactions are intimated with light, and are thus photoelectrochemical reactions. In addition, a review of the specification yields no limiting definition of what is encompassed by the claimed "photoelectrochemical reaction." Thus, a photochemical reaction is, in fact, performed, and the claim has been given the broadest reasonable interpretation consistent with the teachings of the specification regarding a "photoelectrochemical reaction."

Further, the courts have held that "while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished

from the prior art in terms of structure rather than function." *In re Schreiber*, 128 F.3d 1473, 1477-78, 44 USPQ2d 1429, 1431-32 (Fed. Cir. 1997). In addition, "[A]pparatus claims cover what a device *is*, not what a device *does*." *Hewlett-Packard Co. v. Bausch &Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990) (emphasis in original). Therefore, the various uses recited in claims (e.g., initiating a photoelectrochemical reaction) fail to define additional structural elements of the claimed device. Because the prior art teaches structural elements capable of performing the limitations of the claims (i.e., a laser and a current measuring data collection controller), the claims are obvious over the prior art. See MPEP § 2114.

C. Applicant argues on page 8 of the Remarks that initiating a photoelectrochemical reaction on the compound would render the monitoring thereof useless and would be counterproductive.

However, the claims are drawn to an **apparatus**, not a **method**. As noted above, Apparatus claims cover what a device *is*, not what a device *does*. Because the prior art teaches structural elements capable of performing the limitations of the claims (i.e., a laser and a current measuring data collection controller), the claims are obvious over the prior art.

D. Applicant argues on page 9 of the Remarks that Blackburn et al provides two alternative methods for monitoring the same thing.

However, as noted above, the claims are drawn to an **apparatus**, not a **method**. As noted above, Apparatus claims cover what a device *is*, not what a device *does*. Because the prior art teaches structural elements capable of performing the limitations

of the claims (i.e., a laser and a current measuring data collection controller), the claims are obvious over the prior art.

Further, Applicant therefore admits that the apparatus of Blackburn et al is capable of, and therefore has the structural requirements for performing, initiation of a photoelectrochemical reaction and the means to detect both photon emission and the measuring of a current at an electrode.

E. Applicant argues that the previous rejections under 35 USC 103(a) erroneously included claim 1.

However, it is noted that the rejections applied to claim 1 to the extent that it is drawn to the embodiments of the dependent claims.

F. Applicant's remaining arguments on pages 9-11 rely on arguments regarding the alleged deficiencies of Blackburn et al. These arguments are addressed above. Because the arguments were not persuasive, the rejections of the dependent claims as presented above are, in fact, proper. Thus, the pending claims are not allowable, and no claims will be rejoined.

Conclusion

12. No claim is allowed.

13. This action is non-final in view of the new rejections presented above.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert T. Crow whose telephone number is (571)272-

1113. The examiner can normally be reached on Monday through Friday from 8:00 am to 4:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ram Shukla can be reached on (571) 272-0735. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Robert T. Crow/
Examiner, Art Unit 1634

/Diana B. Johannsen/
Primary Examiner, Art Unit 1634

Robert T. Crow
Examiner
Art Unit 1634